THAT WHICH IS CLAIMED IS:

1. A catalyst composition comprising a nitrided and sulfided composition comprising a cobalt compound, a molybdenum compound, and an inorganic oxide compound.

2. A catalyst composition according to claim 1 wherein the weight of the cobalt component of said cobalt compound as a percentage of the total weight of said catalyst composition is from about 0.1% to about 30%.

3. A catalyst composition according to claim 2 wherein the weight of the molybdenum component of said molybdenum compound as a percentage of the total weight of said catalyst composition is from about 1% to about 50%.

4. A catalyst composition according to claim 3 wherein the weight of the inorganic oxide compound as a percentage of the total weight of said catalyst composition is from about 10% to about 95%.

5. A catalyst composition according to claim 4 wherein said inorganic oxide compound is selected from the group consisting of silica, alumina, silica-alumina, magnesia, titania, zirconia, and mixtures of two or more thereof.

6. A catalyst composition according to claim 5 wherein said inorganic oxide compound comprises γ-alumina.

7. A catalyst composition according to claim 1 wherein said composition is nitrided prior to being sulfided.

8. A catalyst composition according to claim 7 wherein said catalyst composition is pre-nitrided and pre-sulfided.

9. A process of making a catalyst composition, said process comprises the steps of:

(a) contacting a cobalt compound and a molybdenum compound with an inorganic oxide compound to provide a cobalt/molybdenum-modified catalyst;

(b) nitriding said cobalt/molybdenum-modified catalyst to provide a nitrided cobalt/molybdenum-modified catalyst; and

(c) sulfiding said nitrided cobalt/molybdenum-modified catalyst to provide a nitrided and sulfided cobalt/molybdenum catalyst.

10. A process according to claim 9 wherein step (a) is accomplished at least in part by impregnating said inorganic oxide compound with an aqueous solution containing said cobalt compound and said molybdenum compound.

11. A process according to claim 10 wherein step (a) is sufficient to incorporate said cobalt compound and said molybdenum compound into said inorganic oxide compound in an amount such that the weight of the cobalt component of said cobalt compound as a percentage of the total weight of said nitrided and sulfided cobalt/molybdenum catalyst is from about 0.1% to about 30% and the weight of the molybdenum component of said molybdenum compound as a percentage of the total weight of said nitrided and sulfided cobalt/molybdenum catalyst is from about 1% to about 50%.

12. A process according to claim 11 wherein step (a) is accomplished at least in part by impregnating said inorganic oxide compound using an aqueous solution containing ammonium heptamolybdate and cobalt nitrate.

13. A process according to claim 11 wherein step (b) is accomplished at least in part by contacting said cobalt/molybdenum-modified catalyst with a decomposable nitrogen-containing compound at a temperature of from 650°C to 800°C.

14. A process according to claim 13 wherein said decomposable nitrogen-containing compound comprises ammonia.

15. A process according to claim 11 wherein step (c) is accomplished at least in part by contacting said nitrided cobalt/molybdenum-modified catalyst with a decomposable sulfur compound at a temperature of from 350° C to 450° C.

16. A process according to claim 15 wherein said decomposable sulfur compound comprises carbon disulfide.

17. A process according to claim 9 wherein steps (b) and (c) are performed prior to contacting said cobalt/molybdenum-modified catalyst with a sulfur-containing hydrocarbon stream under hydrodesulfurization conditions.

18. A hydrodesulfurization process comprising contacting a hydrocarbon feed containing a concentration of organic sulfur compounds and a concentration of aromatic compounds with a catalyst composition comprising a nitrided and sulfided composition comprising a cobalt compound, a molybdenum

compound, and an inorganic oxide compound under conditions sufficient of convert at least a portion of said concentration of organic sulfur compounds to inorganic sulfur compounds, thereby providing a hydrodesulfurized hydrocarbon product.

19. A process according to claim 18 wherein the weight of the cobalt component of said cobalt compound as a percentage of the total weight of said catalyst composition is from about 0.1% to about 30%.

20. A process according to claim 19 wherein the weight of the molybdenum component of said molybdenum compound as a percentage of the total weight of said catalyst composition is from about 1% to about 50%.

21. A process according to claim 20 wherein said hydrocarbon feed is a heavy hydrocarbon fraction which boils in the range of from about 200° F to about 500° F.

22. A process according to claim 21 wherein said concentration of organic sulfur compounds in said hydrocarbon feed is from about 10 ppmw to about 10,000 ppmw.

23. A process according to claim 22 wherein said concentration of aromatic compounds in said hydrocarbon feed is such that the weight of aromatic compounds as a percentage of the total weight of said hydrocarbon feed is greater than about 10%.

24. A process according to claim 23 wherein said hydrocarbon feed contains a concentration of olefinic compounds such that the weight of olefinic

compounds as a percentage of the total weight of said hydrocarbon feed is less than about 20%.

25. A process according to claim 22 wherein said concentration of aromatic compounds in said hydrocarbon feed is such that the weight of aromatic compounds as a percentage of the total weight of said hydrocarbon feed is greater than 50%.

26. A process according to claim 25 wherein said hydrocarbon feed contains a concentration of olefinic compounds such that the weight of olefinic compounds as a percentage of the total weight of said hydrocarbon feed is less than about 2%.

27. A hydrodesulfurization process comprising the steps of:

(a) separating a full range hydrocarbon feed containing a first concentration of organic sulfur compounds and a first concentration of aromatic compounds into a heavy hydrocarbon fraction and a light hydrocarbon fraction, wherein said heavy hydrocarbon fraction boils at a temperature above a cut-point temperature, wherein said light hydrocarbon fraction boils at a temperature below said cut-point temperature, and wherein said heavy hydrocarbon fraction contains a second concentration of organic sulfur compounds and a second concentration of aromatic compounds;

(b) contacting said heavy hydrocarbon fraction with a catalyst composition comprising a nitrided and sulfide composition comprising a cobalt compound, a molybdenum compound, and an inorganic oxide compound under

conditions sufficient of convert at least a portion of said second concentration of organic sulfur compounds to inorganic sulfur compounds, thereby providing a hydrodesulfurized heavy hydrocarbon product; and

(c) combining said hydrodesulfurized heavy hydrocarbon product and said light hydrocarbon fraction to produce a hydrodesulfurized full range hydrocarbon product.

28. A process according to claim 27 wherein said first concentration of aromatic compounds is less than said second concentration of aromatic compounds and said first concentration of organic sulfur compounds is less than said second concentration of organic sulfur compounds.

29. A process according to claim 28 wherein said cut-point temperature is from about 150° F to about 350° F.

30. A process according to claim 29 wherein said first concentration of organic sulfur compounds is from about 5 ppmw to about 5000 ppmw, and wherein said first concentration of aromatic compounds is such that the weight of aromatic compounds as a percentage of the total weight of said full range hydrocarbon fraction is from about 10% to about 50%.

31. A process according to claim 30 wherein said second concentration of organic sulfur compounds is from about 10 ppmw to about 10,000 ppmw, and wherein said second concentration of aromatic compounds is such that the weight of aromatic compounds as a percentage of the total weight of said heavy hydrocarbon fraction is greater than about 10%.

32. A process according to claim 31 wherein said heavy hydrocarbon fraction contains a concentration of olefinic compounds such that the weight of olefinic compounds as a percentage of the total weight of said heavy hydrocarbon fraction is less than about 20%.

33. A process according to claim 32 wherein said catalyst composition is the catalyst composition of claim 1.

34. A process according to claim 32 wherein said catalyst composition is the catalyst composition of claim 8.

35. A process according to claim 32 wherein said catalyst composition is the catalyst composition made by the process of claim 9.